



MEPAG Goals Committee Update

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2010 Goals Committee Members

- Jeff Johnson (USGS), Chair (jrjohnson@usgs.gov)
- **Goal I: Life**
 - Tori Hoehler (NASA Ames; tori.m.hoehler@nasa.gov)
 - Frances Westall (CNRS, France; westall@cnrs-orleans.fr)
- **Goal II: Climate**
 - Scot Rafkin (SwRI; rafkin@boulder.swri.edu)
 - Paul Withers (Boston Univ.; withers@bu.edu)
- **Goal III: Geology**
 - Vicky Hamilton (SwRI; hamilton@boulder.swri.edu)
 - Jeff Plescia (APL/JHU; Jeffrey.Plescia@jhuapl.edu)
- **Goal IV: Human Exploration**
 - Abhi Tripathi (JSC; abhishek.b.tripathi@nasa.gov)
 - Darlene Lim (NASA Ames; Darlene.Lim@nasa.gov)



History of the Goals Document

- 2001 – Original MEPAG Goals Document created
 - Drafted by the MEPAG Executive Committee with inputs from the community
 - Included sessions at MEPAG meetings dedicated to establishing consensus
- 2004 – First Major revisions
- 2005 – Minor Maintenance
- 2006 – Minor Maintenance
- 2008 – Major revision of Goals II & III
- 2009-2010 – Update in progress for Goals I & IV



MEPAG Goals document

Science Goals for Mars Exploration

- I. Determine if life ever arose on Mars
- II. Understand the processes and history of climate on Mars
- III. Determine the evolution of the surface and interior of Mars
- IV. Prepare for human exploration



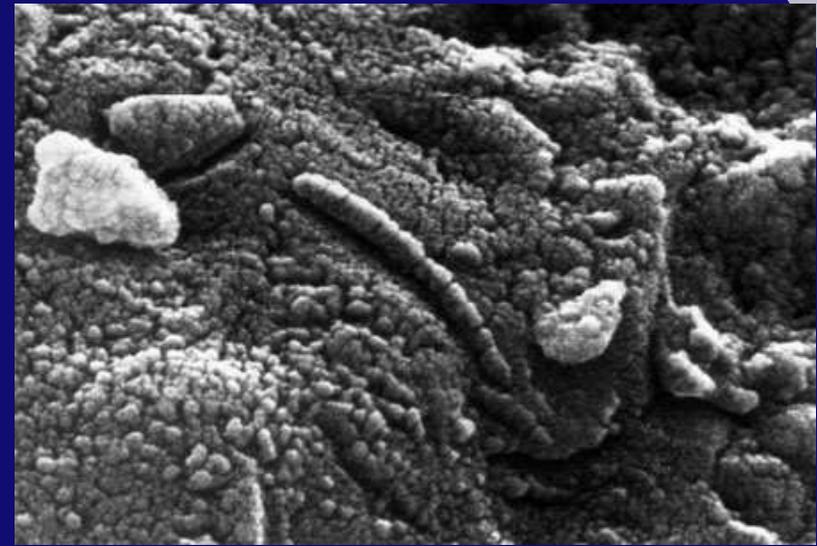


I. GOAL: DETERMINE IF LIFE EVER AROSE ON MARS

A. Objective: Assess the past and present habitability of Mars

B. Objective: Characterize Carbon Cycling in its Geochemical Context

C. Objective: Assess whether life is or was present on Mars



High-resolution scanning electron microscope image showing an unusual tube-like structural form that is less than 1/100th the width of a human hair in size found in meteorite ALH84001. NASA image.

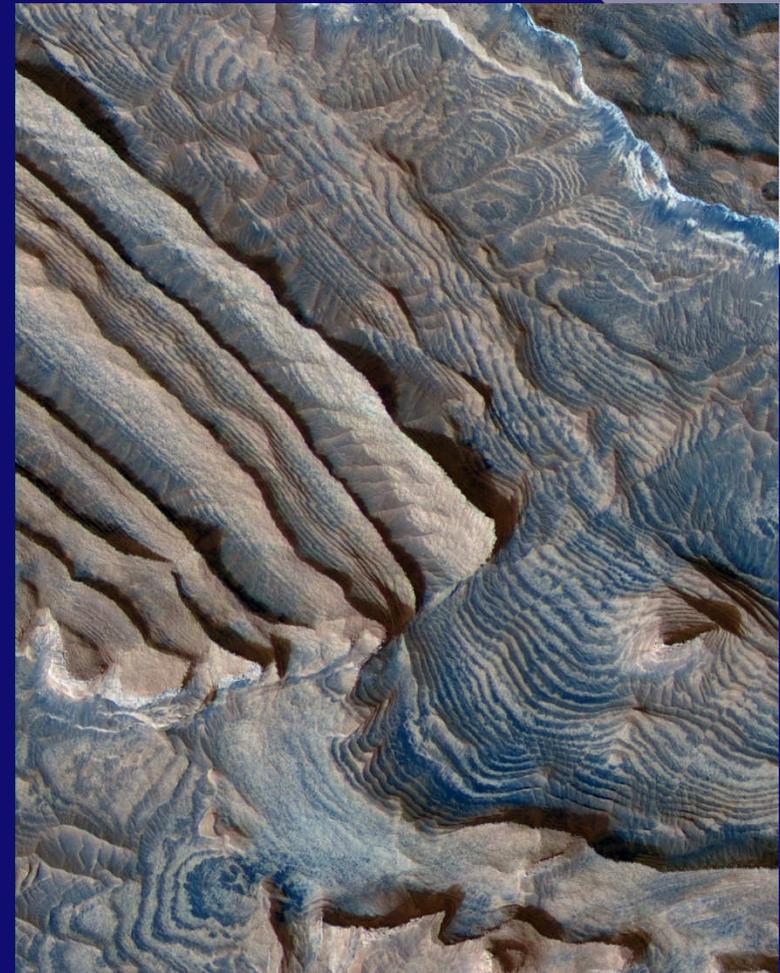


II. GOAL: UNDERSTANDING THE PROCESSES AND HISTORY OF CLIMATE

A. Objective: Characterize Mars' Atmosphere, Present Climate, and Climate Processes Under Current Orbital Configuration

B. Objective: Characterize Mars' Recent Climate History and Climate Processes Under Different Orbital Configurations

C. Objective: Characterize Mars' Ancient Climate and Climate Processes



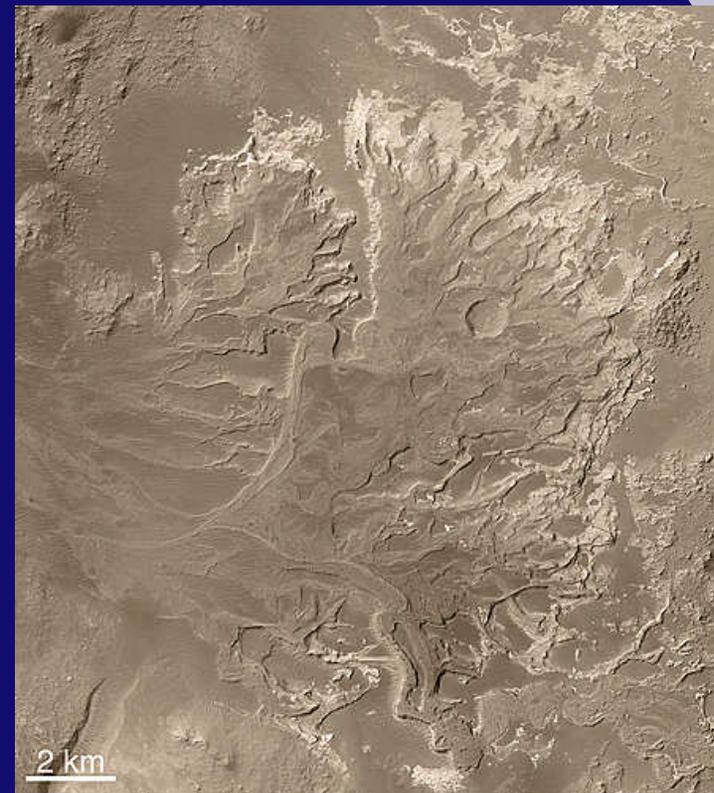
Rhythmic bedding in sedimentary bedrock within Becquerel crater on Mars in HiRISE false-color image. View covers an area about 1.15 km, with individual layers ~3.6 meters thick.

<http://photojournal.jpl.nasa.gov/catalog/PIA11443>



III. GOAL: DETERMINE THE EVOLUTION OF THE SURFACE AND INTERIOR

- A. Objective: Determine the nature and evolution of the geologic processes that have created and modified the Martian crust
- B. Objective: Characterize the structure, composition, dynamics, and evolution of Mars' interior
- C. Objective: Understand the origin, evolution, composition and structure of Phobos and Deimos



http://www.msss.com/mars_images/moc/2005/09/20/eberswalde/

MOC2-1225a: Mosaic of MOC images of Eberswalde delta.



IV. GOAL: PREPARE FOR HUMAN EXPLORATION

- A. Objective. Obtain knowledge of Mars sufficient to design and implement a human mission with acceptable cost, risk and performance
- B. Objective. Conduct risk and/or cost reduction technology and infrastructure demonstrations in transit to, at, or on the surface of Mars
- C. Objective. Characterize the state and processes of the martian atmosphere of critical importance for the safe operation of both robotic and human spacecraft





Revision of the Goals Document

Goal I:

- Desire to re-address objectives and investigations with respect to water
- Westall and Hoehler organizing revision
 - Expected to have new draft on MEPAG website in September, with follow-on inputs from community
 - Decided to get inputs from:
 - Goals Committee members
 - NASA Astrobiology Institute (NAI) Mars focus group (D. DesMarais et al.) organized independent review
 - 15 reviewers (including 6 from European Mars community)
 - Successive rounds of reviews
 - Final received review 12/24/09
 - Revised document incorporating all reviews done on 3/10/10
 - Current document available for comment until March 31 on <http://mepag.jpl.nasa.gov/reports/index.html>



Revision of the Goals Document

Goal IV:

- Design Reference Architecture (DRA) released last fall
 - http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20090012109_2009010520.pdf
 - http://www.nasa.gov/exploration/library/esmd_documents.html
- MEPAG and Tripathi/Lim organized a small Science Analysis Group (SAG) to prepare revised Goal IV
 - Convened Nov. 1, 2009
 - Discussed via telecons through February, 2010
 - Reorganization of Objectives, Investigations, Measurements
 - Current document available for comment on <http://mepag.jpl.nasa.gov/reports/index.html>
- **Comments on both Goal I and IV updates invited by March 31**

